

List of Contents

NUMBER 1

Editorial

- G. Bonham-Carter 1

Special Issue Papers

- M. Gahegan 7 Guest Editorial: Systems integration within the geosciences
- J. Albrecht 9 Geospatial information standards. A comparative study of approaches in the standardisation of geospatial information
- Martin Huber and Daniel Schneider 25 Spatial data standards in view of models of space and the functions operating on them
- M. Breunig 39 An approach to the integration of spatial data and systems for a 3D geo-information system
- S. F. Keller 49 Modeling and sharing geographic data with INTERLIS

Regular Papers

- Antonio Schettino 61 Polygon intersections in spherical topology: application to plate tectonics
- Weixing Wang 71 Image analysis of aggregates
- Peter J. Sakalaukus, Daniel N. Fox, A. Louise Perkins and Lucy F. Smedstad 83 An interactive HTML ocean nowcast GUI based on Perl and JavaScript
- ANON 91 CSM Meeting

Book Reviews

- F. P. Agterberg 93 Fractals and Chaos in Geology and Geophysics, Second Edition, by D. L. Turcotte
- S. A. Rahman 96 Stochastic Models in Geosystems, by S. A. Mochanov and W. A. Woyczynski
- C. Rusu 98 Mathematical Methods for Oceanographers: an Introduction, by E. Laws
- G. F. Bonham-Carter 99 Fundamentals of Engineering Programming with C and FORTRAN, by H. R. Myler

NUMBER 2

- L. Bertuccio, M. Coltelli, G. Nunnari and L. Occhipinti 101 Cellular neural networks for real-time monitoring of volcanic activity
- Hendra Grandis 119 An alternative algorithm for one-dimensional magnetotelluric response calculation
- L. M. Hirsch and J. F. Schuette 127 Graph theory applications to continuity and ranking in geologic models

Gilles Grandjean and Herve Durand	141	Radar Unix: a complete package for GPR data processing
H. Ma, Y. Hu and T. Fang	151	TWOLIQ.FOR: a FORTRAN77 program for simulating immiscibility in silicate liquids
Phaedon C. Kyriakidis, Clayton V. Deutsch and Marshall L. Grant	161	Calculation of the normal scores variogram used for truncated Gaussian lithofacies simulation: theory and FORTRAN code
Glen Davidson and John A. Miller	171	Towards automated 3D analysis of fission tracks in external mica detectors
Bradford G. Nickerson, Peter A. Judd and Larry A. Mayer	179	Data structures for fast searching of SEG-Y seismic data
<i>Short Notes</i>		
M. Cravero and C. Fidelibus	191	A code for scaled flow simulations on generated fracture networks
Stephen T. Johnston	197	Squeezing down plunge projections out of graphics packages
A. E. Boudreau	201	PELE—a version of the MELTS software program for the PC platform
<i>ANON</i>		
J. Brilha and John C. Butler	205	The Internet and teaching geology in Portugal
<i>Book Review</i>		
Jinhua Liang	207	Homogenization and porous media, Ulrich Hornung

NUMBER 3

B. Greiner	209	Euler rotations in plate-tectonic reconstructions
X. H. Wen, J. E. Capilla, C. V. Deutsch, J. J. Gómez-Hernández and A. S. Cullick	217	A program to create permeability fields that honor single-phase flow rate and pressure data
F. Bilim and A. Ates	231	A computer program to estimate the source body magnetization direction from magnetic and gravity anomalies
Mohammad Kudrat, K. P. Sharma, Chandrika Varadachari and Kunal Ghosh	241	An algorithm and program in C-language for computation of standard free energy of formation of clay minerals
Eulogio Pardo-Igúzquiza	251	VARFIT: a fortran-77 program for fitting variogram models by weighted least squares
Arnau Folch, Mariano Vázquez, Ramon Codina and Joan Martí	263	A fractional-step finite-element method for the Navier–Stokes equations applied to magma-chamber withdrawal
Gerardo M. E. Perillo, M. Cintia Piccolo, José Mosquera and Santiago Aggio	277	Algorithm to calculate equal-area grid cells in irregular estuarine cross-sections
S. S. Egan, S. Kane, T. S. Buddin, G. D. Williams and D. Hodgetts	283	Computer modelling and visualisation of the structural deformation caused by movement along geological faults

ANON

- Don M. Mackenzie and John C. Butler 299 The Tripartite Interactive Assessment Delivery System (TRIADS)

Corrigenda

- José Fernández, Ting-To Yu and John B. Rundle 301 Corrigenda to "Deformation produced by a rectangular dipping fault in a viscoelastic-gravitational layered earth model. Part I: thrust fault, fltgrv and fltgrh FORTRAN programs" [Computers & Geosciences 22 (1996) 735-750]

Book reviews

- Donald E. Myers 309 GSLIB: Geostatistical Software Library and User's Guide, Second Edition
- Xin-She Yang 313 Numerical modelling in applied geodynamics

NUMBER 4

- John Cubitt 315 Dedication to Daniel F. Merriam
- John C. Butler 319 Guest Editorial: From Punch Cards to Applets
- Dan F. Merriam 321 Reminiscences of the editor of the Kansas Geological Survey Computer Contributions, 1966-1970 & a byte
- Arthur B. Busbey III 335 Macintosh shareware/freeware earthscience software
- Andrew R. Piggott 341 Publicly accessible software for groundwater modelling and analysis
- Bernhardt Saini-Eidukat and Andrew Yahin 347 Web-phreeq: a WWW instructional tool for modeling the distribution of chemical species in water
- C. V. Deutsch 355 Reservoir modeling with publicly available software
- William L. Wingle, Eileen P. Poeter and Sean A. McKenna 365 UNCERT: geostatistics, uncertainty analysis and visualization software applied to groundwater flow and contaminant transport modeling
- Richard B. Winston 377 MODFLOW-related freeware and shareware resources on the internet
- Peter Bird 383 Thin-plate and thin-shell finite-element programs for forward dynamic modeling of plate deformation and faulting
- Trond Helge Torsvik and Mark Andrew Smethurst 395 Plate tectonic modelling: virtual reality with GMAP
- Christopher L. Liner 403 Geophysics and NIH Image
- John W. Stockwell Jr. 415 The CWP/SU: Seismic Un*x package
- M. E. Templeton and C. A. Gough 421 Web seismic Un*x: making seismic reflection processing more accessible

Klaus Bitzer	431	Two-dimensional simulation of clastic and carbonate sedimentation, consolidation, subsidence, fluid flow, heat flow and solute transport during the formation of sedimentary basins
Ulf Nordlund	449	FUZZIM: forward stratigraphic modeling made simple
Eileen P. Poeter and Mary C. Hill	457	UCODE, a computer code for universal inverse modeling
Dave Watson	463	The natural neighbor series manuals and source codes
W. T. C. Sowerbutts	467	The consortium approach to producing Earth Science courseware
Gary A. Novak	475	Virtual courseware for geoscience education: <i>Virtual Earthquake</i> and <i>Virtual Dating</i>
S. Krumm	489	The Erlangen geological and mineralogical software collection
S. Krumm	501	Simulation of XRD patterns from oriented clay minerals by WinStruct
Christopher D. Condit	511	Components of dynamic digital maps
J. Wagstaff, G. McKay, A. Reid and G. Reid	523	Remote operation of a Cameca SX100 scanning electron microprobe
ANON		
John C. Butler	531	Another Node on the Internet

NUMBER 5

Hans-Jürgen Förster, John C. Davis, Gerhard Tischendorf and Reimar Seltmann	533	Multivariate analyses of Erzgebirge granite and rhyolite composition: implications for classification of granites and their genetic relations
Josef Ježek, Stanislav Saic, Karel Segeth and Karel Schulmann	547	Three-dimensional hydrodynamical modelling of viscous flow around a rotating ellipsoidal inclusion
Richard L. Orndorff and Peter J. Whiting	559	Computing effective discharge with S-PLUS
N. A. Walsworth and D. J. King	567	Image modelling of forest changes associated with acid mine drainage
Eric A. de Kemp	581	Visualization of complex geological structures using 3-D Bézier construction tools
Paul Sardini, Eric Moreau, Stéphane Sammartino and Gérard Touchard	599	Primary mineral connectivity of polyphasic igneous rocks by high-quality digitisation and 2D image analysis
Short Note		
T. N. Jowhar	609	BGT: a FORTRAN 77 computer program for biotite-garnet geothermometry
ANON		
J. H. Shea and John C. Butler	621	Computers and education

Book Review

- J. Unwin David 623 *Environmental Information Systems*, by O. Gunther

NUMBER 6

- G. F. Bonham-Carter 625 Editorial
- Xianlin Ma and André G. Journel 627 An expanded GSLIB cokriging program allowing for two Markov models
- Neil A. Wells 641 ASTRA.BAS: a program in QuickBasic 4.5 for exploring rose diagrams, circular histograms and some alternatives
- Tianfu Xu, Karsten Pruess and George Brimhall 655 An improved equilibrium-kinetics speciation algorithm for redox reactions in variably saturated subsurface flow systems
- Taizhong Duan, Cedric M. Griffiths and Sverre O. Johnsen 667 A new approach to reservoir heterogeneity modelling: conditional simulation of 2-D parasequences in shallow marine depositional systems using an attributed controlled grammar
- Hua Qing Wang 683 Optimal upstream weighting in the multiple-cell-balance method for simulating mass transport in ground water
- Kurt L. Feigl and Emmeline Dupré 695 RNGCHN: a program to calculate displacement components from dislocations in an elastic half-space with applications for modeling geodetic measurements of crustal deformation
- Short Note**
- Y. Hanumantha Rao 705 C-program for the calculation of gas hydrate stability zone thickness
- ANON**
- John C. Butler 709 Web-based instruction: a personal view
- Book Reviews**
- Diego Perugini 711 *Multivariate Statistical Analysis for Geographers*
- John C. Davis 713 *Regression Graphics: Ideas for Studying Regressions through Graphics*, by R. D. Cook

NUMBER 7

- G. Ch. Miliareisis and D. P. Argialas 715 Segmentation of physiographic features from the global digital elevation model/GTOPO30
- Amitava Ghosh 729 A FORTRAN program for fitting Weibull distribution and generating samples
- Stefan Baisch and Götz H. R. Bokelmann 739 Spectral analysis with incomplete time series: an example from seismology
- Xunhong Chen 751 An inverse method for soil permeability estimation from gas pump tests

Ute Christina Herzfeld, Michael S. Matassa and Matthias Mimler	765	TRANSVIEW: a program for matching universal transverse mercator (UTM) and geographic coordinates
Hind Taud, Jean-François Parrot and Roman Alvarez	775	DEM generation by contour line dilation
J. Friedrich	785	Object-oriented design and implementation of CFDLab: a computer-assisted learning tool for fluid dynamics using dual reciprocity boundary element methodology
Michael G. Wing, Richard F. Keim and Arne E. Skaugset	801	Applying geostatistics to quantify distributions of large woody debris in streams
Clifford Thurber and Donna Eberhart-Phillips	809	Local earthquake tomography with flexible gridding
Roberto Bellasio, Roberto Bianconi, Giovanni Graziani and Sonia Mosca	819	RTMOD: an Internet based system to analyse the predictions of long-range atmospheric dispersion models
Lawrence W. Martz and Jurgen Garbrecht	835	An outlet breaching algorithm for the treatment of closed depressions in a raster DEM
Shuguang Mao and André G. Journel	845	Conditional 3D simulation of lithofacies with 2D seismic data
Alexander Sokolov and Fredrik Wulff	863	SwingStations: a web-based client tool for the Baltic environmental database
John C. Butler	873	Another Node on the Internet

NUMBER 8

M. Toubin, C. Dumont, E. P. Verrecchia, O. Laligant, A. Diou, F. Truchetet and M. A. Abidi	877	Multi-scale analysis of shell growth increments using wavelet transform
P. Rama Rao, K. V. Swamy and I. V. Radhakrishna Murthy	887	Inversion of gravity anomalies of three-dimensional density interfaces
Antonio Schettino	897	Computational methods for calculating geometric parameters of tectonic plates
Fuat Yavuz	909	A revised program for microprobe-derived amphibole analyses using the IMA rules
Timo Tiira	929	Detecting teleseismic events using artificial neural networks
John C. Butler	939	Another Node on the Internet
<i>Book Reviews</i> David Unwin	941	<i>A Hierarchical Coordinate System for Geoprocessing and Cartography: Lecture Notes in Earth Sciences, 79</i> ; Geoffrey H Dutton: Springer-Verlag, Berlin, 1999, ISBN 3-540-64980-8, 230 pp.
Johannes Wendebourg	943	<i>Computerized Modeling of Sedimentary Systems</i> ; J. Harff, W. Lemke and K. Stattegger (editors). Springer-Verlag, Berlin, 1999, 452 pp. ISBN 3-540-64109-2 (hardcover), US \$129

- Xin-she Yang 945 *Modeling Density-Driven Flow in Porous Media: Principles, Numerics, Software*; Ekkehard O. Holzbecher: Springer-Verlag, Berlin. 1998, 286 pp., ISBN 3-540-63677-3, US \$84.95.

Announcements

NUMBER 9

Guest Editorial

- Frederik P. Agterberg and Qiuming Cheng 947 Introduction to Special Issue on "Fractals and Multifractals"
- Qiuming Cheng 949 Multifractality and spatial statistics
- G. M. Lewis, S. Lovejoy, D. Schertzer and S. Pecknold 963 The scale invariant generator technique for quantifying anisotropic scale invariance
- Ute Christina Herzfeld and Christoph Overbeck 979 Analysis and simulation of scale-dependent fractal surfaces with application to seafloor morphology
- A. Prokoph 1009 Fractal, multifractal and sliding window correlation dimension analysis of sedimentary time series
- B. L. Sim, Frederik P. Agterberg and C. Beaudry 1023 Determining the cutoff between background and relative base metal smelter contamination levels using multifractal methods
- Y. C. Cheng, P. J. Lee and T. Y. Lee 1043 Self-similarity dimensions of the Taiwan Island landscape
- Tian-Yuan Shih, Jin-Tsong Hwang and Tzong-Jer Tsai 1051 The fractal properties of sea surface topography derived from TOPEX/POSEIDON (1992-1996)
- Dominique Bérubé and Michel Jébrak 1059 High precision boundary fractal analysis for shape characterization
- Qiuming Cheng 1073 The gliding box method for multifractal modeling
- C. Paredes and F. J. Elorza 1081 Fractal and multifractal analysis of fractured geological media: surface-subsurface correlation
- John W. F. Waldron and John C. Butler 1097 Another Node on the Internet

NUMBER 10

- Andreas P. Briner, Heino Kronenberg, Martin Mazurek, Helmut Horn, Martin Engi and Tjerk Peters 1101 FieldBook and GeoDatabase: tools for field data acquisition and analysis
- Simon Houlding 1113 Direct volume estimation — a geostatistical technique for mine planning and grade control
- Kate Moore, Jason Dykes and Jo Wood 1125 Using Java to interact with geo-referenced VRML within a virtual field course

Alain Bonneville and Patrick Capolsini	1133	THERMIC: a 2-D finite-element tool to solve conductive and advective heat transfer problems in Earth Sciences
Walter C. Dragani	1145	A feature model of surface pressure and wind fields associated with the passage of atmospheric cold fronts
Christopher M. Wurster, William P. Patterson and Michael M. Cheatham	1155	Advances in micromilling techniques: a new apparatus for acquiring high-resolution oxygen and carbon stable isotope values and major/minor elemental ratios from accretionary carbonate
Bo Huang and Hui Lin	1163	GeoVR: a web-based tool for virtual reality presentation from 2D GIS data
Hui Lin, Jianhua Gong and Freeman Wang	1173	Web-based three-dimensional geo-referenced visualization
John W. F. Waldron and John C. Butler	1183	Another Node on the Internet

